

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : P/L RETEN & DEPLOY-MPM DEPLOY FMEA NO 02-5B-J03-2 REV:04/05/88

ASSEMBLY :MPM SHOULDER MECHANISM				CRIT. FUNC: 1
P/N RI :V082-544600				CRIT. HDW: 1
P/N VENDOR:	VEHICLE	102	103	104
QUANTITY :1	EFFECTIVITY:	X	X	X
	PHASE(S):	PL	LO X OO X DO X LS	

PREPARED BY:	REDUNDANCY SCREEN:	A-	B-	C-
DES S. L. SHARP	APPROVED BY: <i>J. Leighton</i>	APPROVED BY (NASA):		
REL M. B. MOSKOWITZ	DES <i>J. L. For G. Campbell</i>	SSM		
QE W. J. SMITH	REL <i>MEM [Signature]</i>	REL		
	QE <i>W. J. Smith for R. [Signature]</i>	QE		

ITEM:

JETTISON MECHANISM, MANIPULATOR POSITIONING MECHANISM (MPM) SHOULDER

FUNCTION:

MECHANISM IS RELEASED BY PYRO RETRACTOR AND SERVES TO SEPARATE THE MANIPULATOR POSITIONING MECHANISM (MPM)/REMOTE MANIPULATOR SYSTEM (RMS) FROM THE BASE STRUCTURE.

FAILURE MODE:

INADVERTENT OPERATION

CAUSE(S):

FAILURE/DEFLECTION OF INTERNAL PART

EFFECTS ON:

(A)SUBSYSTEM (B)INTERFACES (C)MISSION (D)CREW/VEHICLE

(A) UNCOMMANDED OPERATION OF JETTISON WILL RESULT IN LOSS OF FUNCTION OF RMS.

(B) INADVERTENT RELEASE OF SHOULDER WITHOUT FIRST ACTIVATING THE GUILLOTINE WILL ALLOW AN UNCONTROLLABLE RMS/MPM TO BE RETAINED AT THE SHOULDER BY ONLY THE WIRE BUNDLE.

(C) FAILURE MAY RESULT IN LOSS OF MISSION DUE TO LOSS OF RMS CAPABILITY.

(D) FAILURE MAY RESULT IN LOSS OF CREW/VEHICLE DUE TO INTERFERENCE WITH PAYLOAD BAY (PLB) DOOR CLOSURE, CONTACT DAMAGE TO PRESSURIZED CREW COMPARTMENT, OR STRUCTURAL FAILURE DURING ASCENT/ENTRY/LANDING.

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : P/L RETEN & DEPLOY-MPM DEPLOY FMEA NO 02-5B-J03-2 REV:04/05/88

DISPOSITION & RATIONALE:

(A) DESIGN (B) TEST (C) INSPECTION (D) FAILURE HISTORY (E) OPERATIONAL USE

(A) DESIGN

COMPONENTS DESIGNED WITH STRUCTURAL FACTOR OF SAFETY OF 1.4 OR GREATER. MECHANISM REQUIREMENTS INCLUDE DUAL RETENTION OF ALL FASTENERS AND DUAL ROTATION PROVISIONS FOR ALL MOVING JOINTS.

(B) TEST

QUALIFICATION TESTS: VIBRATION 34 MIN/AXIS 4.5 OVERALL GRMS -14 MIN/AXIS 3.6 OVERALL GRMS. TEMPERATURE 24 HOUR -100 DEG F, 24 HOUR +250 DEG F, AND 9 HOUR AMBIENT. FOUR SYSTEM SEPARATION TESTS WERE PERFORMED.

ACCEPTANCE TESTS: ACCEPTANCE- BY INSPECTION DURING ASSEMBLY.

OMRSD: GROUND TURNAROUND INCLUDES VISUAL INSPECTION FOR EVIDENCE OF STRUCTURAL/MECHANICAL DAMAGE PRIOR TO EACH FLIGHT.

(C) INSPECTION

RECEIVING INSPECTION

MATERIAL AND PROCESS CERTIFICATIONS ARE VERIFIED BY INSPECTION.

CONTAMINATION CONTROL

CORROSION PROTECTION IS VERIFIED BY INSPECTION. HARDWARE IS ASSEMBLED IN A CLEAN ENVIRONMENT.

ASSEMBLY/INSTALLATION

THREADED FASTENERS INSTALLED AND TORQUED PER SPECIFICATION ARE VERIFIED BY INSPECTION. RIGGING OPERATIONS ARE PER DRAWING GENERAL NOTES AND TEST MANUFACTURING ORDERS (TMO) AND ARE VERIFIED BY INSPECTION.

NONDESTRUCTIVE EVALUATION

PENETRANT INSPECTION IS VERIFIED BY INSPECTION.

CRITICAL PROCESSES

HEAT TREAT PER SPECIFICATION AND DRY FILM LUBE ARE VERIFIED BY INSPECTION.

HANDLING/PACKAGING

HANDLING AND PACKAGING REQUIREMENTS ARE VERIFIED BY INSPECTION

(D) FAILURE HISTORY

THERE HAVE BEEN NO ACCEPTANCE TEST, QUALIFICATION TEST, FIELD OR FLIGHT FAILURES ASSOCIATED WITH THIS FAILURE MODE.

(E) OPERATIONAL USE

EXTRAVEHICULAR ACTIVITY (EVA) PROCEDURES ARE POSSIBLE TO SEVERE THE WIRE BUNDLE, TO RELEASE THE MPM.